Washington State Transportation Commission

Washington State Comprehensive Tolling Study

Volume 1 – Policy Analysis

Interim

Report

prepared for

Washington State Transportation Commission

by

Cambridge Systematics, Inc.

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Frank Wilson & Associates

January 31, 2006

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1.0 Introduction and Background

Purpose

The purpose of the study is to help the State make policy-level decisions on if, where, when, and how to toll by providing a practical step-by-step tolling strategy for Washington State. Although the State has had numerous toll facilities in the past, with the exception of the Washington State Ferries, there are none currently in operation. Two facilities, the Tacoma Narrows Bridge and the SR 167 HOT Lanes Pilot Project, are authorized as toll facilities and currently are under construction. There also are numerous tolling proposals in various stages of study.

Why Toll?

From the ancient turnpikes (where the gatekeeper turned the pike to allow travelers to pass after paying their toll) to the 18th century United States, and into the early days of automotive travel, tolling has been used to fund expensive highway projects.

Fast-forward to the early years of the 21st century, where traffic congestion plagues our urban areas, infrastructure built a generation or two ago is deteriorating, and we are faced with enormous gaps between transportation needs and available funds. Our instincts tell us to turn to tolling as a way to pay for new infrastructure. But the world has changed. More funding is not the whole answer. Even if we had enough money, we would likely not build our way out of congestion, particularly given the environmental and social issues.

Tolling or Pricing?
We use these similar words in subtly different ways.

Tolling ***is a more general word, referring to any form of collecting a direct user fee on a road.***

Pricing ***refers to the practice of using price to manage traffic.***

Technology now lets us price highways to make more effective use of limited resources, just like electric companies charge more during the day than at night to save on expensive infrastructure. Just like airlines and hotels that use pricing to fill seats and rooms during slow periods.

Pricing is not just about generating funds. When applied to highways, pricing has three distinct, yet interrelated benefits.

Pricing can manage traffic to make the system flow more efficiently and reliably. When we jam too many cars onto a highway at one time, lanes that should be able to handle 2,000 vehicles per hour break down, and handle only 500 or 600. If we can manage the amount of traffic that uses a highway during peak times, we can achieve the higher traffic flow rates. If we can manage traffic effectively, it may mean that we can serve more commuters and business during the peak and the "need" for more and bigger facilities can be reduced – just like the electric utilities can avoid building new power plants if they manage peak demand. This cuts down on the cost of building our infrastructure.

Pricing saves people time, and time is money. Congestion in the Puget Sound is estimated to cost us $1.23 billion dollars a year.[1] By pricing the system to operate more efficiently and reliably, the resulting time savings are a bonus to the economy and to society. Business people and trucks can cover more territory and waste less time, improving productivity. Parents spend less time commuting and more time with their children.

Pricing generates revenue. This revenue can contribute to the construction and operation of the transportation system.

Using tolling to fund projects in the traditional way – one by one, yields some revenue but only a portion of the time savings possible through pricing concepts.

A common reaction to the idea of tolling is that it represents double taxation – "I paid for this road with the gas tax." Charging a price to cross a bridge is reasonable, and is a common means of funding. Today's lack of tolls in Washington State is an anomaly – virtually all of the major bridges in Washington State were built with tolls, at toll rates ranging from $1.33 to over $23 when adjusted for inflation. Pricing can be seen as an extension of the current gas tax system and enhances our current roadway investment by insuring that it operates efficiently and reliably.

We can extend this argument from traditional tolling to modern road pricing. Some parts of the system are more valuable when space is limited. Charging a premium for highway use during those periods is reasonable. The story below illustrates this point.

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[1] Texas Transportation Institute, *2005 Urban Mobility Study*, reflects data for 2003.

In his recent book, "Mobility – America's Transportation Mess and How to Fix It," Joseph M. Giglio, Executive Professor at the Graduate School of Business at Northeastern University tells an apt parable that makes the case for highway pricing.

One of the nation's most unusual movie theaters is the Bijou, in an otherwise typical northern California town that we will call Santa Rosita to avoid embarrassing anyone.

Until four years ago, it was no different from any other small-town American movie theater trying to survive on modest ticket sales as the town's last outpost of a vaguely Art Deco Hollywood culture that had largely disappeared elsewhere. But things changed when the elderly owner died of lung cancer and his widow announced that she was going to sell out to a local real estate developer who planned to convert the Bijou into a combination private gym and sports medicine office building (with each use presumably complementing the other).

For reasons that have never been fully explained but may be obvious, this announcement created a groundswell of dismay throughout the town at the prospect of losing its only traditional movie theater. This dismay reached such proportions that the town's government found itself pressured into buying the Bijou from the owner's widow to keep it open showing movies.

And in a burst of civic enthusiasm […] the government proceeded to abolish all admissions charges. Henceforth, the Bijou would be open to everyone at no cost "just like a city park or swimming pool," the mayor proclaimed with great pride. Ever since, the Bijou's operating costs have been funded entirely by Santa Rosita's taxpayers through the municipal budget.

Needless to say, this free-movie policy has led to a considerable change in the Bijou's attendance patterns. Virtually no one goes to the movies on weekday afternoons anymore. Even on weekday evenings, the Bijou rarely has more than a handful of moviegoers.

But on weekends when the local schools and most businesses are closed, the picture changes dramatically. The Bijou is full of people eager to enjoy its free movies, with many more waiting patiently in long lines outside for seats to become available. And when the Bijou is playing an especially popular film, those waiting lines begin forming early in the morning well in advance of the noontime opening, reaching such length that Santa Rosita's police department has to assign several of its all-too-few police officers to control the crowds outside the Bijou.

On its face, this seems like a ridiculous way to operate a movie theater. Everywhere else, movie theaters charge admission for access to their seats. They even charge higher ticket prices on weekend evenings when moviegoer demand is at its peak in order to maximize their box-office revenues (which, not so incidentally, tends to spread out demand by encouraging some moviegoers to attend on weekdays when ticket prices are lower).

But the Bijou has no tickets. Access to its seats is free to everyone. That is, free in the sense of not charging any money for seat access. Considerably less than free when you consider the hours moviegoers have to wait in line for seats to become available on high-demand weekends when everyone wants to see free movies.

As ridiculous as this sounds as a system for operating movie theaters, it is exactly the way the United States operates most of its highways. Access to highway lanes is free to all motorists, regardless of the time of day or day of the week and despite the fact that we must pay for access to every other transportation mode.

Free, that is, in the sense of not charging motorists a dollar price for each mile they travel. But scarcely free when we consider the time these motorists have to spend traveling that mile during periods of high demand when bumper-to-bumper traffic reduces average speeds to about 10 miles per hour.

Until fairly recently, we could offer the excuse that the logistical problems of directly charging motorists for highway use made the whole idea impractical. Charging for highway use meant toll booths where motorists had to stop and pay out cash from their pockets.

[…]

In a world where goods and services aren't available in unlimited quantities, some kind of quantity rationing is inevitable. In the former Leninist nations of Easter Europe, TIME RATIONING was the standard method. The prices of consumer goods were kept low enough for everyone to afford. But consumers had to spend inordinate amounts of time standing in lines to make purchases.

The alternative is PRICE RATIONING. In effect, consumers bid up the price for immediate purchase of a particular good or service until the limited quantity available balances the quantity demanded. This is how the United States rations the supply of most goods and services – with two notable exceptions. One is access to movie seats in Santa Rosita's Bijou Theater. The other is access to virtually all of the nation's roadways. These exceptions use the Leninist concept of time rationing. This favors those who value their time the least and penalizes those who value their time the most (which is not quite the same as saying that the rich and the poor are equally free to sleep under highway overpasses).

[…]

The "pay-as-you-travel" concept for funding highways has a built-in sense of "fairness" that fuel taxes can never enjoy. Now technology lets us carry the fairness concept even further by providing discounts to certain population groups such as the elderly, the disabled, and the working poor (who are often highly auto-dependent and least able to change their commuting times). By explicitly dedicating the revenue from highway charges to transportation purposes only, we avoid the negative perception dogging all government budgets that "too many of my tax dollars are used to support services that only benefit other people." Pay-as-you-travel means that motorists support the highways they use according to how much they use them.

Joseph M. Giglio, *Mobility – America's Transportation Mess and How to Fix It*, The Hudson Institute, 2005. *This excerpt is used by permission.*

Our goal is to have a transportation system that provides for the safe, reliable, timely, and effective movement of people, goods, services, and information to support Washington's economy, communities, and environment. The traditional approach has been to build – new and wider highways, more and faster transit systems. In the 1970s, we realized that there is a limit to how much we can build, and that building has side effects. We sought ways to manage demand – saving construction dollars and reducing environmental impact.

States and regions around the United States are turning to tolling. In addition to the traditional use of tolling to fund expensive bridges, tunnels and highways, there is experimentation with high-occupancy toll (HOT) lanes, express toll lanes, truck only lanes, cordon tolling, and mileage-based pricing.

National Trends in Tolling and Pricing

States and regions around the United States are turning to tolling. In addition to the traditional use of tolling to fund expensive bridges, tunnels and highways, there is experimentation with high-occupancy toll (HOT) lanes, express toll lanes, truck only lanes, cordon tolling, and mileage-based pricing. It was not until the popularization of automobiles in the early to mid-20th century that toll-backed financing gained renewed popularity. Starting with the Pennsylvania Turnpike in the 1930s, state after state embarked on building intercity highways using toll revenue bonds. For the most part, these new highways were developed by special purpose authorities and were financed with bonds backed by the anticipated toll collections. This era of turnpike building extended into the 1950s and early 1960s, but was mostly extinguished by the advent of the Interstate Highway System begun in 1956. Though some of these early turnpikes paid off their debt and removed their tolls, most still operate as tolled facilities, since the need to maintain, upgrade, and expand could be funded through continuing toll collection on the original facilities.

The late 1970s and 1980s saw another revival of the toll financing concept, this time focusing on urban expressways in a few fast-growing areas, where traditional revenue sources were inadequate to meet growing traffic demands.

In the 1990s and continuing into the early part of the 21st century, toll facility development continued, this time enhanced by the promise of electronic toll collection to reduce or eliminate the delays commonly associated with traditional toll roads. Electronic toll collection also opened the opportunity for new concepts in tolling, such as high-occupancy toll (HOT) lanes, express toll lanes, truck only lanes, cordon tolling, and mileage-based pricing. Innovations are proceeding at a pace, whereby, it soon may be technically feasible to toll a broad spectrum of other roads, using global positioning satellites (GPS) or roadside short-range radio methods. Though the more recent activity has been more widespread than that in the 1970s and 1980s, tolling continues to be a solution primarily being done by a few states with intense traffic needs.

The advent of electronic toll collection has broadened the potential policy rationale for tolling. Whereas, the historical use of tolling has been to fund high-cost projects, it can now be used to manage congestion on a network with limited capacity. Economists have long argued that using flat user charges (the gas tax) does not reflect the true value of highway travel under congested conditions. Using price to manage demand is used in the airline, hotel,

and telecommunications industries, to name a few. With electronic tolling, it can now be used in the highway industry, and many regions are starting to move in that direction.

Tolling in Washington State Is Not New

Virtually all of the major bridges in Washington State were built with tolls (see Table 1.1). Even with the fuel tax as the primary engine to fund the transportation system, it is reasonable to charge people more for facilities that cost more to build than a typical stretch of highway.

Table 1.1 Historical Use of Tolling in Washington

Bridge	Toll Collected	Toll[a]	Initial Toll Converted to 2005 Inflation-Adjusted Dollars
Longview (SR 433) *(Built in 1930, Purchased in 1947)*	1930-1965	$1.00	$23.02
Lacey V. Murrow Memorial Bridge (I-90) *(First Lake Washington Bridge)*	1940-1949	$0.50	$6.86
Tacoma Narrows Bridge (SR 16) *(First Bridge)*	1940-collapsed	$1.10	$15.10
Agate Pass Toll Bridge (SR 305)	1950-1951	$0.50	$3.99
Tacoma Narrows Bridge (SR 16) *(Second Bridge)*	1950-1965	$1.00	$8.77
Fox Island Bridge (SR 303)	1954-1965	$0.75	$5.36
Port Washington Narrows Bridge (SR 303)	1958-1972	$0.20	$1.33
Spokane River Bridges (SR 2/SR 395)	1958-1990	$0.50	$2.66
Vancouver/Portland Bridge (I-5)	1960-1966	$0.40	$2.60
Hood Canal Bridge (SR 104)	1961-1979	$2.60	$16.71
Biggs Rapids Bridge (U.S. 97) *(Sam Hill Memorial Bridge)*	1962-1975	$2.00	$12.73
Evergreen Point Bridge (SR 520) *(Second Lake Washington Bridge)*	1963-1979	$0.70	$4.40
Vernita Toll Bridge (SR 24)	1965-1976	$1.50	$9.15
Hood Canal Bridge (SR 104) *(Rebuilt)*	1982-1985	$4.00	$9.96
New Tacoma Narrows Bridge (SR 16)	*Planned for 2007*	*NA*	*$3.00*

Source: Washington State Department of Transportation.

[a] Toll fees shown are round-trip charges for a vehicle and driver only.

How Does the *Comprehensive Tolling Study* Address the Issues Facing Washington?

When it opens in 2007, Tacoma Narrows Bridge will be the first nonferry tolling project in Washington since tolls were removed from the Hood Canal Bridge in 1984. Washington also is developing a nine-mile HOT lane project on SR 167 from I-405 in Tukwila to 15th Street SW in Auburn set to open in 2007-2008 for a four-year experimental period. These projects have not been without their controversies, and if Washington wants to move forward with the tolling concept on other parts of its system, it needs to develop a consistent decision-making framework to ensure equitable treatment around the State.

To this end, the Legislature directed the Washington State Transportation Commission (the Commission) to carry out this study. This interim report issued in January 2006 focuses on policy and implementation issues. Eight background papers ("Volume 2") delve into the details of various issues, and this Policy Report ("Volume 1") synthesizes the results of that work.

The final report to be issued in July 2006 also will have technical analysis of several illustrative examples of tolling and pricing projects to give a sense as to how different approaches to tolling might be applied to actual highway locations throughout the State. However, these examples will only be for illustrative purposes and will not be a list of possible projects the Commission recommends be tolled.

Scope of the Study

The legislation that authorized this study defined several key elements for the scope of work to be performed, which are described below.

Feasibility Analysis

In assessing the feasibility and impacts of different tolling strategies, several questions must be addressed, including:

- How should a tolling policy balance traffic management and revenue objectives?
- What is a "fair and equitable" way to choose and operate projects?

- What screening mechanisms and analysis tools can/should be used to consider toll projects?

- What are the implications for transportation system operations and effectiveness of different types of tolling strategies and projects?

- What are the risks associated with tolling in general and for specific projects?

Tacoma Narrows Bridge Toll Policy

The legislation that directed the Commission to carry out this study calls for the "development of more uniform and equitable policies regarding the distribution of financial obligations imposed on those paying the tolls on the Tacoma Narrows Bridge, and opportunities and options for reducing the outstanding indebtedness on the bridge project, including the possibility of buydowns and other means of spreading the cost of the project more equitably." This study investigates these questions, and also considers how potential solutions on the Tacoma Narrows Bridge affect statewide toll policy.

Implementation Considerations

Advancing tolling brings up a variety of implementation considerations. This study explores:

- How can the State be most effective as it implements **tolling technology** now and into the future?

- What **legal and regulatory** issues need to be addressed?

- What **organizational and administrative** arrangements are needed to carry out a statewide tolling policy?

- How can the State address **social and environmental impacts in a "fair" and "equitable" manner** around the State?

Throughout, the study considers appropriate actions for the near-, medium- and long term.

Evaluation of Particular Projects or Systems of Projects

An element of the study involves considering the merits of particular projects. The legislation directs that the study evaluate these projects:

- Alaskan Way Viaduct;
- SR 520 Floating Bridge;
- I-405 Managed Lanes; and
- SR 704 "Cross Base Highway."

The legislation also required this project to support the Regional Transportation Investment District (RTID) requirements to "address the state highway system and other transportation facilities" in King, Pierce, and Snohomish Counties to determine the feasibility of value pricing on a facility or network of facilities. Evaluation of all of the specific projects identified above will help fulfill this requirement. Additional facilities are under study as part of the Congestion Relief Analysis (CRA) Phase II.[2]

The study is statewide in scope, so other projects around the State also are being considered. It is important to note that this study will not be a comprehensive and definitive look at every potential tolling project in the State. Rather, this study will evaluate 11 unique scenarios in addition to those already being studied as part of the CRA Phase II project. Each scenario consists of a single project or a group of projects.

The scenarios being chosen for evaluation have been chosen to provide illustrative examples to help form the tolling policy. However, it is important to emphasize that:

- Choice of projects for evaluation in this study does not mean that these projects are more appropriate for tolling than other projects around the State.

[2] The CRA Phase II project is a study being carried out by the WSDOT Urban Planning Office, investigating different means of addressing mounting congestion in urban areas. Among the approaches being investigated are pricing mechanisms such as systems of high-occupancy toll lanes and tolling all freeways in the Puget Sound region.

- No final decisions about particular projects moving forward (or not) will be made as part of this study.

- This study will not result in so-called "investment-grade" analysis sufficient to support project financing.

One product of this study will be a decision-making process through which additional projects can be evaluated over time.

Outreach and Communications with the Public

Outreach and communications will be critical to any initiative by Washington State to implement tolling. This study includes an assessment of how outreach and communications has been done in other places, to learn lessons from those experiences. In order to get an early read on public attitudes, a limited number of ascertainment interviews were conducted with stakeholders. These interviews provided a sense of the issues that Washington might face as it tries to implement tolling, but does not represent a statistically valid assessment of public attitudes.

The study will make recommendations for how outreach and communications activities should be done, including recommendations to develop, and potentially carry out, a plan for assessing public attitudes.

Limitations of the Analysis

This Comprehensive Tolling Study is structured to take a preliminary look at several illustrative examples of potential toll projects in Washington State, with the purpose of guiding overall policy-making with regards to tolling. The consultant team worked with the Commission to recommend the scenarios that best represent the kinds of projects that might be considered in the State in the near, medium, and long term. Since the entire universe of potential projects is not being considered, this study is not intended to definitively determine the suitability of any particular project for tolling or pricing, nor as a means to priority rank projects. It also is not intended to be an investment-grade analysis.

There are three key analytical elements used in planning a toll project: 1) traffic and revenue estimates; 2) cost estimates; and 3) financial plan. The limitations surrounding these kinds of evaluations in general are provided in Volume 2, Background Paper 6.

About This Report

This report (Volume 1) contains a synthesis of the main policy issues facing Washington State as it considers more extensive use of tolling. Each of the topical areas had elements that related to the other areas, so we organized the policy analysis around eight cross-cutting questions, which are the topic of the remainder of this report:

1. What role can tolling play in developing and managing Washington's transportation system?

2. How should Washington determine which parts of the system to toll or price?

3. What rules should govern the use of toll revenue?

4. What rules should govern setting toll rates?

5. What is the most appropriate governance and organizational structure?

6. How do technology and toll operations influence toll policy?

7. How do equity, fairness, and uniformity issues influence toll policy?

8. What are the implications of alternative toll policies at the Tacoma Narrows Bridge?

More detailed background papers are contained in Volume 2 of this report addressing these issues:

1. National Perspective: Uses of Tolling and Related Issues;

2. Ascertainment Interviews: Opinions of Selected Washington Community Leaders;

3. Organizational and Administrative Structures for Tolling;

4. Equity, Fairness and Uniformity and Tolling;

5. National Perspective Public Attitudes and Perceptions;

6. Limitations of Studies Used to Advance Toll Projects;

7. Tacoma Narrows Bridge Toll Policy; and

8. Toll Technology and Operations Considerations.

2.0 Policy Questions

If we "toll" a bridge, it might generate a revenue stream, perhaps $50 million per year.

If we "price" the bridge to optimize flow we add to that the value of time savings.

If 40,000 people a day save 15 minutes the value of the time savings alone (not counting fuel and emissions) is another $30 million per year.

Question 1
What role can tolling play in developing and managing Washington's transportation system?

The Commission recommends that Washington adopt a statewide pricing policy that encourages effective system management. Tolling should also be used to provide a supplementary source of funding for appropriate projects. In all cases, diversion and system efficiency objectives should be recognized.

In a January 2005 report, the Transportation Commission estimated that Washington needs $11.4 billion in additional funding over the next 10 years to address urgently needed transportation programs and projects. Several packages of funding sources were considered, but to put it in simple terms, it would require an increase in the gas tax of 32 cents per gallon to close that funding gap.[3] When faced with the need to fund expensive infrastructure such as bridges, tolling has the potential to supplement the funding plan to enable projects to be built before they could with a limited gas tax funding pool.

Tolls also can be used to restore the balance between transportation system supply and demand. For example, pricing a highway with higher tolls imposed during periods of peak demand can cause travelers to consider the value of their trip and either switch to non peak times, carpool, switch to transit, or change their destination.

When transportation demand better matches capacity, the entire system flows better. These time savings provide real economic value that exceeds the cost of the tolls being paid.

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[3] Washington State Transportation Commission and Washington State Department of Transportation, *Recommendation on New Funding to Address Critical Transportation Needs Over the Next Decade, A Working Document for the 2005 Legislative Session,* January 2005. Gas tax estimate developed by Cambridge Systematics from data in this report.

Pricing can be applied in a variety of ways. Express toll lanes and high-occupancy toll (HOT) lanes are being advanced around the country, and HOT Lanes are being tried in Washington on SR 167. Variable pricing by time of day on bridges can help spread traffic demand beyond the peak travel periods. Trucks transporting freight congest traffic during peak use periods, and differential truck tolls during these times might cause the logistics supply chain to operate differently to let trucks travel at night and therefore make better use of overall system capacity. Truck-only toll lanes also are a possibility.

Ultimately, pricing the entire system will be technically possible, yielding the greatest travel efficiency and reliability while providing a revenue stream, giving us two ways to get the most benefit from our limited transportation budgets.

It is impossible for Washington to build its way out of congestion, yet it needs to upgrade highways that are functionally or structurally deficient. Pricing can help Washington make the most of its limited infrastructure, by managing flow – in some cases, potentially eliminating or reducing the need for expensive construction. Pricing for system management also will generate revenue that can contribute to construction or rehabilitation of the system. Where management alone is not enough to address traffic and infrastructure needs on expensive parts of the system (e.g., bridges), tolls can supplement the funding of projects, as long as they are integrated within a comprehensive performance and management strategy.

PierPASS Manages Peak Traffic Demands at the Ports of Los Angeles and Long Beach

The Ports of Los Angeles and Long Beach had a problem. Historically, Ports only operated in the daytime. Therefore, all freight had to move on the roads and railroads during the day when non-freight traffic was heaviest. This caused delays for freight traffic and also raised community and environmental concerns. There was plenty of capacity, just at the wrong times of day. Limited hours of port operation made spreading peak loads impossible, yet simply expanding the hours of port operation would not be enough to make sure that shippers actually used the added hours.

The PierPASS OffPeak program began in July 2005. It assesses a fee of $80 per 40-foot container for cargo that moves through truck gates at the ports during peak hours (Mondays-Fridays, 3:00 a.m. to 6:00 p.m.)

PierPASS supports expanded Port operation hours (maximizing Port output) by providing an economic incentive to move containers during off-peak times, spreading demand, minimizing congestion, and optimizing throughput. Shippers whose warehousing and distribution facilities off-port can operate 24/7 can benefit. During the first two weeks of operation, about 30 percent of freight traffic was shifted off-peak, thereby reducing congestion.

Pricing highways to the extent described is not "business as usual" – it is a significant change from the current system. It will cause people to rethink the way they do business and the way they organize their lives, and that such rethinking may be uncomfortable. Questions 2 through 8 below address some of the main issues surrounding these changes.

Question 2
How should Washington determine which parts of the system to toll or price?

While pricing all highways may be the most effective way to manage transportation system performance, the reality is that such as system may be many years off. Washington needs a decision framework to determine where, when and how road pricing or tolling should be applied. The decision framework should depend on objective criteria applied consistently around the State, and should recognize the primary motivation involved in applying price to different parts of the system.

Tolling or pricing should be considered where these primary criteria are met:

1. Pricing optimizes system performance on new capacity. Examples would be new express toll lanes (with or without special treatment for HOV), or special toll lanes for trucks.

2. Pricing optimizes system performance on existing capacity, perhaps in lieu of an eventual need for new capacity. An example would be conversion of existing HOV and/or a general purpose lane to HOT or express toll lanes. Another example could be pricing existing freeway in a congested area to manage traffic into and within a specific area.

3. The cost of a project so high as to not be affordable using only normal tax-based funding.

4. Tolls yield enough money to support a defined proportion of the system construction, operations, and maintenance expenses.

These criteria presume that the transportation system component being evaluated provides enough benefits to warrant the cost of construction. In addition to the basic criteria above, supplemental criteria should be considered to protect against unintended consequences or impacts.

- **Diversionary Impacts –** The proposed tolling action should not cause unreasonable levels of diversion to other facilities that may not be able to handle the additional demand. The issue of diversion is different when considering tolling a new facility than when considering tolling an existing facility. With a new facility, the primary diversion would be ***to*** a new facility, although the level of traffic on that new facility would be lower than if not tolled. When tolling an existing facility, diversion might be ***from*** that existing facility, thereby putting traffic burdens elsewhere – potentially a much greater concern. In such cases, the benefits from tolling should be expected to outweigh the disbenefits of the diversionary impacts.

- **Operational Feasibility and Safety –** The pricing policies need to be carried out in a safe and effective way. If pricing causes degraded operations or undue safety problems, projects should not move forward.

- **Economic or Social Impacts –** If a proposed pricing strategy causes undue economic hardship or social impacts to a particular population, that could either be cause to not move forward with the pricing project, or to make sure that such impacts were mitigated.

The issue of the need for toll-free alternatives often comes up when exploring toll options. This was evidenced in the ascertainment interviews done for this study. This issue may not be "one-size-fits-all," and Washington should carefully consider the implications of policies that might require toll free alternatives. Consider these different cases:

- **New Toll Road –** A new toll road will almost always have a toll-free alternative, since current traffic patterns do not include that highway. The toll-free alternative may not be as convenient as the new tolled alternative, but the additional convenience is presumably what is being paid for by the toll.

- **New Toll Bridge –** There are no new bridge crossings currently under consideration in Washington (only replacements, or expansions in the same corridor). Typically, toll bridges do not have toll-free alternatives, because of 1) the cost involved, and 2) the diversionary opportunities.

- **New High-Occupancy Toll (HOT) or Express Toll Lane, or conversion of an existing HOV lane to a HOT lane –** Projects like this will automatically have toll free alternatives.

- **Tolling an existing facility to fund expensive improvements –** Washington may want to consider putting tolls on existing facilities that are in need of extraordinary improvements. Two different examples of this might be rebuilding the Alaskan Way Viaduct and safety improvements to Snoqualmie Pass. The Viaduct project is in an urban area, with numerous toll free alternatives. It is these alternatives that make the Viaduct project potentially so difficult to make successful as a toll project. The Pass project, on the other hand, has limited toll free alternatives. However, if tolling enables the Pass to remain free of rockslides and avalanches, there is additional value added that cannot be provided by tax sources alone.

- **Tolling existing facilities to provide traffic management benefits –** If Washington were to move to a traffic management strategy that involved pricing all freeways in the Puget Sound region, or that involved tolling all access into a defined region of Seattle (so-called cordon pricing), it could potentially create a system that left drivers without toll free alternatives. Pricing a large system of existing highways is likely to raise a vast amount of money, without an offsetting capital cost. It would then be possible to take that money and use it to fund transportation improvements such as bottleneck mitigation or transit system enhancements. Such a system approach could potentially overcome objections of having no toll free highway alternative, but this is a choice that would need to be made.

The above discussion illustrates that the availability or non-availability of toll free routes may not necessarily be an appropriate criteria for evaluating toll projects.

Question 3
What rules should govern use of toll dollars?

Traditionally, tolls were used to fund projects or systems of projects, and when the debt used to finance the projects was paid off, the tolls were removed. This was the case for the 14 toll bridges built in Washington, and is a general pattern historically around the United States. However, this approach did not provide for the eventual need for major capital repair or replacement after the tolls were removed.

The policy framework outlined in Questions 1 and 2 is one that emphasizes the importance of transportation facilities being operated as a system. This system perspective also should influence the use of toll revenues, with tolls used to:

- Pay for toll system operation and maintenance;

- Fund (in whole or in part) construction and maintenance of tolled highways, including capital rehabilitation; and

- Fund-related parts of the transportation system, potentially, including transit. Using toll revenue for transit can be helpful at addressing perceived issues of pricing benefiting only the rich.

A related question is whether toll revenues collected on specific facilities should be dedicated to a geographically constrained area. Managing tolling and pricing from a true system perspective would point towards no geographic constraints on the use of funds.

There also is a compelling reason for tolls to remain after the initial construction costs are paid off. First, the system management benefits of tolling cannot be achieved without the tolls. Second, highways and bridges are never really "paid off."

Capital rehabilitation is always needed for every transportation system, and there is evidence of this in Washington. Tacoma Narrows, Evergreen Point, Hood Canal, and Columbia River bridges were all tolled, yet it has been difficult to find funds for capital rehabilitation.

Question 4
What rules should govern setting toll rates?

The usual practice around the United States has been to set toll rates as low as possible and still cover annual debt service payments of a construction bond. However, a toll policy that puts system management objectives first needs to reflect other considerations.

Washington already has a statewide toll policy on the Washington State Ferries system. The ferry toll policy establishes tolls for vehicles, which vary by vehicle size, and for passengers, with a variety of special rates for particular groups such as seniors, youth, and frequent users. Ferry tolls also vary by the length of the route and include seasonal surcharges. However, the fares have no relationship to the specific capital or operating costs of particular routes – they are priced as a system. A system of highway toll facilities also could be operated and financed as a system with toll rates set on a system rather than a facility by facility basis.

When pricing purely for system management the objective is to manage traffic congestion. The prices, therefore, should be those that best achieve that result. In the case of a managed lane where the objective is to maximize flow and reliability in that lane, tolls will need to rise to the level required to maintain the desired traffic flow.

When the revenue potential of a toll project is important, the issue becomes a little more complicated. The toll rates that maximize revenue might not be the same as those that maximize system efficiency.

As the Tacoma Narrows Bridge case illustrates, Washington also should be concerned about geographic equity. There are several potential approaches:

1. Develop a formula that allocates a baseline value for highway construction (potentially on a lane-mile basis). The difference between this value and the amount needed to actually construct the facility could be the basis for the amount that should be recovered from tolls. For example, if the average lane-mile of highway costs $10 million to build, and the highway under consideration for tolling costs $100 million, the difference – $90 million would be the basis for setting the toll amount.

2. Set a standard percentage of cost recovery that must be met by the toll project.

3. Using the Washington State Ferries model as an example, set the basic bridge toll at some level, say $3, and then adjust that level up or down to reflect different characteristics, such as vehicle length or construction cost. This could be applied to bridges, but may not be as applicable to other parts of the system.

There also may be situations where the funding is as important as traffic management. These cases may demand a unique toll-setting policy, designed to best achieve the stated objectives.

Question 5
What is the most appropriate governance and organizational structure?

We investigated trends in the tolling industry around the United States and also interviewed various transportation leaders in Washington. Key issues that emerged from this research included:

- State-level oversight and guidance relative to regional-level representation and operations;

- Provision of seamless electronic payment systems within a single statement of activities for multiple modes and open fiscal accountability requires a robust backroom financial operation;

- Authority to establish tolled facilities and to manage tolling rates for managed lanes projects and systems;

- Ability to uphold the technical and fiscal integrity of the tolling system in light of politically sensitive public scrutiny; and

- Ability to entertain and engage in public-private partnerships.

Currently, the Washington State Transportation Commission is the Toll Authority. As such, they have the responsibility to set tolls. Project selection is the prerogative of the legislature and specific regional authorities.

The results of our national research and state-level stakeholder interviews indicate the growing acceptance of tolling as a means of project finance and traffic management in congested urban regions. Nationally, recent trends point to the development of statewide tolling agencies that have regionally based representation. The continued growth in urban regions and desire for continued mobility with personal automobiles has moved the focus of tolling agencies from statewide turnpikes to urban projects with stronger emphasis on traffic management. In Washington State, we found a clear desire for regionally specific policies for pricing.

Organizational Variations in Response to the Key Issues

The vision, mission, and scope of tolling in the State impacts the choice of organizational and governance models:

- **Number of Facilities –** If the vision for tolling was limited to a single project or single, limited area system, versus a statewide or regional network of toll roads and bridges.

- **Primary Purpose of Tolling –** Consider if the primary purpose for raising funds to advance projects to construction or is it to serve as a means of managing traffic via managed lanes and dynamic pricing strategies.

- **Technical Expertise –** A state-level pool of technical expertise in the area of tolling may be desired alongside a regionally

based customer service and operations-oriented group; or, a fully capable regional tolling agency with minimal state-level technical or policy involvement.

- **Financial –** The issue of "who" handles the financing activities also will drive the organizational model to be developed.

At the top level, however, are three key concerns: 1) managing the customer's experience; 2) who decides when, where and how to toll; and 3) the most effective way to operate multiple facilities.

Virtually everyone involved in discussions of this topic (Commissioners, WSDOT, consultants) agreed that the toll customer experience should be with one "gizmo," one number to call, and one invoice, implying that these functions should be centralized, and probably handled somewhere within the WSDOT organization. There are numerous details regarding the nuts and bolts of running a tolling operation, but the many decisions required to plan, implement, operate, and maintain tolling need to flow from basic concepts such as who gets to initiate and approve tolling on parts of the transportation system – governance.

The Commission's internal debate on governance issues found some favoring a strong state role in advancing parts of a tolled system, while others felt that the impetus should come from the regions. Regardless, there was consensus that the structure should allow for a way for regions or localities to initiate tolling within the framework of their normal transportation planning process. It is preferable for tolling to be "invited in" to a region, rather than having tolls be imposed by the State. Regional entities should have the option of placing funding packages before the public in referendum form that include both new funding sources and tolling.

Earlier in Question 2, we asked, "*How should Washington determine which parts of the system to toll or price?*" Part of our recommendation was to have objective criteria applied consistently around the State. The balance between local or regional initiative and consistent policy at the statewide level should account for these concerns:

- A way to combine funds from regional or local entities with state or Federal funds.

- A set of specific, consistent criteria that should be met before tolling or pricing were implemented, potentially administered through WSDOT.

- A means of advancing projects that meet the policy criteria without Legislature action. The authority to approve such projects should rest with the Commission or some other statewide tolling authority, working with information provided by WSDOT.

Our discussions led to two similar, yet subtly different approaches to governance.

Centralized Statewide, whereby all project selection and configuration decisions are made centrally. Within this state-level control, however, localities or regions could initiate projects and work with the central administration to advance them through the planning, design, construction, and operation process. Ultimate decision authority, however, would reside within this central body.

The advantages of this governance structure are that there is a single tolling agency for all levels of project and system development with the potential for close coordination with overall WSDOT project programming. This allows all tolling expertise to be assembled in a single organization, and is the most direct way to achieve statewide consistency in policy. A Statewide Tolling Oversight Committee, which could be the existing Transportation Commission would provide policy direction. Regional representation on this committee would provide some level of regional voice, although not as direct or as strong as under the second option.

The disadvantage of a centralized governance structure is that it may be less effective at generating local or regional support for tolling solutions than a structure with more direct regional initiative.

Regional plus Statewide, which allows local or regional tolling authorities to be created to advance projects or systems, with the State leading decision-making in rural areas or areas that cross regional boundaries. These regional authorities would collaborate with other regional entities on where or how to toll different parts of the system to advance regional goals. This builds upon the ideas that have led to the creation of Regional Transportation Improvement Districts, or similar regional entities. To avoid duplication of specialized functions and expertise, detailed project development, operations, and maintenance activities would always be carried out by WSDOT.

The chief advantage of this approach is that it allows regional champions to move projects and systems into the forefront rather

than waiting for a state-level champion. The closer connection to the regional support base is viewed by many experts in the toll industry as critical to the success of urban toll facilities. As with the centralized statewide concept, the tolling expertise can be kept centralized.

The disadvantage of this approach is that it requires commitment to continual organizational and operational communication between the regional- and state-level toll agencies. There also is the potential for some redundancy in skills between the state- and regional-level.

Commission Recommendation

The commission weighed the desire for regional initiative with the importance of consistency of policy setting around the state. It recommends that governance of tolling be carried out through a centralized authority with robust and continuous regional input that includes the right to propose projects. In practice, this would mean that the centralized authority would set forth overall policy and criteria for determining which parts of the system could be tolled. Regions could initiate and pursue studies in accord with those criteria, and ultimately apply to the centralized authority for permission to toll. The centralized authority would be responsible for determining consistency with the criteria, and for setting toll rates.

The day-to-day administration of tolling operations, including system development functions (i.e., studies, design, system architecture, technology) would be by WSDOT.

Question 6
How does technology and toll operations influence statewide toll policy? How should statewide toll policy influence technology and operations choices?

The deployment of toll collection technology to meet the operational requirements of the various types of toll collection approaches described above comes with a wide range of potential challenges, issues, opportunities, and risks. Understanding the factors and their implications is required when selecting an overall approach to tolling within the State of Washington. Policy and toll project decisions will influence the technology choices, but technology also will have an impact on policies and projects.

Interoperability

Customers have come to expect a level of interoperability with toll systems, and are frustrated when such interoperability is not available. These customer service expectations have been identified based upon experience at other toll facilities and market research, including surveys and focus groups. Customers expect:

- **One "Gizmo"–** Only one on-board device (i.e., transponder) for electronic toll collection payments around the State;
- **One Number –** A single customer service telephone number for all inquiries; and
- **One Statement –** A consolidated statement for all toll activity around the State.

While the customer expectations are simple, interoperability is not a trivial problem. Currently, WSDOT is working toward a system with a single customer service center and one point of contact for all operations. This consolidated operations model has evolved in many areas because of the potential cost savings and the provision of consolidated customer service.

The consolidated approach is what customers expect. However, as toll facilities outside of the Puget Sound Region develop, there may be a need to consider regional customer service operations. The potential new crossing of the Columbia River in the Vancouver/ Portland region is one such example.

Public Private Partnership Issues

Under the Transportation Innovative Partnerships Program, Washington State is reviewing and updated its approach to Public Private Partnerships (PPP) for transportation projects. It is anticipated that some of the potential projects under this program would include a tolling component. The tolling technology and operational aspects of these projects must be coordinated with the overall WSDOT tolling program. Issues to be coordinated will include toll setting authority, interoperability, customer service, enforcement policy and procedures, cost allocation, and technology upgrades. The first four items are the most critical from a customer perspective.

Proprietary Technology Issues

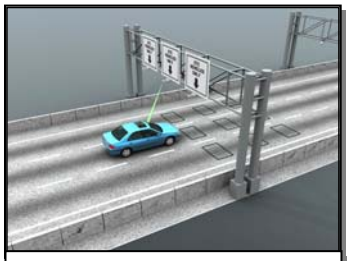
Currently, there is not a national standard for the sharing of information between the transponder in a vehicle and the roadside

transponder reader. There are regional and programmatic standards with a small number of suppliers. The national standard is under development and should be on the market within the next several years. It is anticipated that manufacturers will install transponders that are compliant with the new national standard in new vehicles.

WSDOT has selected as its primary transponder one that is proprietary to a single supplier. This selection was made to provide a shorter-term, cost-effective solution to fill the gap between current technology and the new standard. WSDOT policy is, and should remain, to move to national technology standards in an orderly fashion as they are adopted. In this way, multiple suppliers will become available, and use of proprietary technology can be minimized over time.

Toll Collection without Toll Booths

Modern technology has eliminated one of the main complaints about toll facilities: stopping to pay the toll. Nonstop toll collection is enabled by either vehicle-mounted transponders or devices to automatically read license plates. In an urban setting with a primarily local population, projects being developed today can safely do away with manual toll collection, since the majority of the customers can be encouraged to get transponders. Those that choose not to get transponders can have tolls collected through the automated license plate recognition systems. Open road tolling requires less right-of-way, no toll collectors, and no stopping for toll patrons. It is possible that if the Tacoma Narrows Bridge were being designed today, that there would be no manual toll booths.



Open road tolling allows vehicles to pay tolls without stopping at toll booth.

On the flip side, open-road-tolling means that operational costs are shifted to customer service and violation enforcement activities. Violation enforcement activities can be time-consuming, because they rely on people reading license plate images captured by potential violators, and a sometimes cumbersome process to verify, process, and collect tolls and fines. It is still unclear whether current operations that are 100 percent open road tolling have lower operational costs than manual operations.

As Washington looks forward to projects beyond Tacoma Narrows Bridge, it should actively consider whether any manual toll collection should be provided. In the immediate term, 100 percent open road tolling should only be actively considered for all new toll facilities especially for high volume, urban settings with limited right-of-way, and all managed lane implementations. The combined manual/open-road configuration might best be

used in lower volume locations with a lower percentage of repeat customers. Over time, this conclusion might change, as national standards emerge for built-in in-vehicle transponder technology.

Managing a Network of Toll Facilities

Dynamically priced toll facilities implemented to date have been relatively simple, using only one or two tolling zones. As WSDOT looks to potential networks of managed facilities, the technology challenges multiply. The main challenges are to set rates and communicate the price information to the traveling public so that the system is managed to its optimum flow.

Since traffic levels and available capacity might vary over the network, prices should ideally be set by segment. The network could be divided into logical travel segments with prices set based on maintaining an acceptable level of traffic flow. Before the start of each new segment, travelers could be presented with information on the current toll rate for the next segment. The roadway design would need to allow drivers adequate time to make a decision to continue on the tolled portion or move to the free portion of the facility.

The question is, how far in advance can you guarantee a price to the customer for a portion of the network, and how does this uncertainty affect the ability to maintain traffic flowing at the optimum rate. This is a problem that has not yet been solved in the industry, and will require additional research and experimentation.

Technology Refresh

Within less than 10 years, a technology investment has generally reached the end of its economic life, especially with the rapid advancement of technology. The same is true for electronic toll collection systems. The State and any potential private partners should consider this lifespan and be ready to upgrade relevant components of the ETC system at all levels. Flexibility will be required as the technology marketplace moves the toll industry in directions that have not been anticipated.

The State should actively monitor the progress of developing a national standard for transponders and consider becoming a test bed for early deployment of this standard. This would provide an opportunity to fully test the standard and integrate it into toll and other applications. The toll collection system should be reviewed on a two-year cycle to determine its overall performance against current toll technology and operational benchmarks.

Privacy

Moving to open road tolling brings up privacy issues. To date, participation in electronic toll collection programs has been voluntary. Any toll system that requires the use of electronic toll collection will mandate the identification of individual vehicles, which in theory could be used to record time, location, and speed of travel. Some segments of the population will oppose any new technology that may enable the government to monitor their movements.

Current Washington State law prohibits the release of individual toll collection records to third parties, but does allow media access to transit smart card information. Once open road tolling, which will enable toll collection without transponders is deployed, the same protection should be extended to the patrons without transponders.

Question 7
How do equity, fairness, and uniformity issues influence toll policy?

National experience has shown that equity issues can become a factor in the consideration of proposed toll projects: proposed projects in numerous states have failed due to the perceived inequity associated with tolls and pricing. Even in areas with existing toll facilities, new toll proposals are not immune from fairness criticisms. Common criticisms include: "We've already paid for this road," or, "It's not fair I must pay a toll, when XYZ community across town does not," or "tolling my project frees up funds to be used elsewhere in the state" or, "Toll roads only benefit the rich." Left unanswered, these issues may overwhelm public opinion and potentially elicit legal concerns.

Although there is no definitive description of *equity* or *fairness*, there are five general types of equity that apply for toll facilities:

- **Geographic Equity –** Concerning the distribution of benefits and burdens throughout the State of Washington. Are improvements distributed in a logical and rational manner, based upon some objective and measurable criteria?

- **Income Equity –** Concerning the distribution of benefits and burdens upon economically disadvantaged communities. Do improvements negatively impact disadvantaged communities? Are improvements with negative consequences necessary for greater state or regional vitality?

- **Participation Equity –** Concerning the involvement of affected communities in the decision-making process for the distribution of benefits and burdens. Do disadvantaged communities have a voice in the decision-making process, and, is that voice adequately represented relative to the scale of impact?

- **Opportunity Equity –** Concerning the specific distribution of benefits and burdens throughout the State relative to decision criteria. Are decision-making criteria, such as cost recovery, influenced by secondary affects, such as income status?

- **Modal Equity –** Concerning the distribution of benefits and burdens upon preferred travel behavior. Do activities conflict with public perception for the encouragement of multimodal transportation?

Geographic and income equity are the most important considerations for the statewide tolling study. Issues with geographic equity will largely be reflected in public opinion, which in turn reflects participation and modal equity. Income equity also incorporates elements of opportunity equity and modal equity.

As toll corridors are considered for the State, geographic equity concerns are best evaluated in the course of the established planning and implementation processes at the regional and statewide level. These processes are identifiable, compatible with preestablished criteria, and offer an opportunity to comment and revise the process consistently over time. Toll policies, in order to be viewed as equitable relative to the distribution of other transportation revenues, should be made an integral component of this process. Furthermore, toll policies should not be set outside of this environment, as that lends credence to the criticism that "the rules were changed."

In short, there are no easy answers to what is fair from a geographic perspective. Selecting any project (tolled or not) in an environment of resource shortfall relative to needs involves a political choice. Political choices, by their nature, involve winners and losers for any given snapshot of time. Therefore, the framework for choosing toll policies and projects over an extended period of time must be consistent and the process must be fair. What this means is that any toll policies that might emerge from this study should be carried out statewide, and incorporated into the larger project development and selection process.

In comparison to geographic equity, the basis for income equity analysis in toll policies is found in environmental justice, established by a series of successive laws and executive orders since

1964. Failing to address concerns with income equity in the conceptual stage of development may jeopardize any necessary environmental clearances for the project(s). The primary principles for income equity include:

- Avoid, mitigate, and/or minimize disproportionately high and adverse effects on minority and low-income populations;
- Ensure full and fair participation by all affected communities; and
- Prevent denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Through the careful and deliberate planning process, issues pertaining to income equity can more easily be mitigated or alleviated than geographic equity, fulfilling the requirements of environmental justice. As statewide and regional toll policies are developed, planners and policy-makers should address key questions designed to identify: 1) potential income equity concerns, and, 2) ways to mitigate those that may occur. Some of these questions include:

- Are proposed toll facilities located in the areas of highest need?
- Are proposed facilities disproportionately influenced by potential cost recovery?
- Are the distributions of benefits aligned with the principles of environmental justice?
- Are there ways to redistribute revenues to disadvantaged communities?
- Have alternative access options been considered for the facility, such as free use by HOVs or discounted toll rates for low-income households?
- If electronic tolling is included, have issues related to credit cards and account debits been resolved in order to permit the broadest opportunity as possible to participate?
- Are interest and citizen groups properly involved throughout the process of identifying projects and considering the impacts on their communities?

Sometimes, economically disadvantaged populations cannot partake of the benefits of tolled projects. For example, if using a toll

project requires a transponder, and you need a credit card or bank account to get one, then some people are denied access to the project. Such a concern can be addressed by allowing cash accounts or other ways of using the system. In other cases there may be concerns about people's ability to pay the tolls, especially if there are no alternatives. In these cases, the use toll revenue to subsidize transit services, or toll payment assistance could be appropriate.

It is important to remember that toll projects are intended to bring benefits to the communities that they serve – benefits that might not occur if the project did not happen.

Ultimately, no project needs to be unnecessarily delayed or tabled due to issues of equity. Rather, correctly identifying concerns and addressing them through deliberate and transparent policy and action can help further the case for tolls in a broad transportation financing and planning context.

Question 8
What are the implications of alternative toll policies at the Tacoma Narrows Bridge?

The legislation *(ESSB 6091, Section 206, (1)(a))* mandating this study, specifically states:

> *(a) The study must include an analysis of the only currently authorized toll facility, the Tacoma Narrows Bridge project. The study findings must include i) the development of more uniform and equitable policies regarding the distribution of financial obligations imposed on those paying the tolls on the Tacoma Narrows Bridge, and ii) opportunities and options for reducing the outstanding indebtedness on the bridge project, including the possibility of buydowns and other means of spreading the cost of the project more equitably.*

At the heart of this task is the directive for "*the development of **more uniform and equitable** policies regarding the distribution of financial obligations imposed on those paying the tolls on the Tacoma Narrows Bridge.*" The implication of these words is that the legislature may consider the current policies to be ***less*** uniform and equitable than desired. Based on our understanding of the criticism of the current policy, we understand the concerns to be as follows:

- The Tacoma Narrows Bridge will be the only toll facility in Washington, and tolls pay for almost 100 percent of the new span.[4]

- There are other high-value/high-cost facilities in the State that are not tolled.

- Although there are tolls on the ferries, tolls pay none of the capital costs, and only part of the operating cost

- Therefore, users of the Tacoma Narrows Bridge feel they have been singled out for special treatment, in that they have to pay tolls, while users of other facilities do not. This is the source of the characterization of the tolls on the Tacoma Narrows Bridge as less uniform and equitable.

Currently Proposed Tacoma Narrows Bridge Toll Rates

The proposed toll structure for the Tacoma Narrows Bridge (TNB) involves a $3 eastbound toll for all vehicles once the new bridge opens in 2007, with toll increases every three years in $1 increments until a maximum auto toll of $6 is reached in 2016. Starting in 2008, vehicles with more than two axles would be charged a higher toll in proportion to the number of axles (capped at a six-axle maximum toll). These were the toll rates that WSDOT used in developing its financial plan for the bridge project in 2002, and are subject to change based on the Commission's toll-setting authority.

The bonds for the Tacoma Narrows Bridge are obligations of the motor vehicle fuel tax fund. State law says:

- TNB toll collections must be adequate to semi-annually fully reimburse the motor vehicle fund;

- Tolls must remain on until bonds are repaid;

- Tolls must be removed when bonds are repaid;

- Tolls may be used to fund operations and maintenance, but unless legislature provides these funds, tolls must cover these expenses

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[4] WSDOT indicates that there are significant portions of the SR 16/ Tacoma Narrows Bridge projects that are paid for by tax revenues; therefore, the project is not 100 percent paid for from tolls. However, this does not change the fact that Tacoma Narrows currently is the only non-ferry toll project in the State.

In practice, any transfers to the TNB fund will lessen the toll levels required to fully reimburse the motor vehicle fund – a "buy-down." The bottom line is that the Commission does not have the authority to take action to reduce expected toll revenue needed to meet state law. Therefore, the only action that the Commission may take to reduce the amount of money paid by direct users of the Tacoma Narrows Bridge is to recommend to the Legislature that additional budget be provided to make up any shortfall. However, revenue-neutral changes in toll structure are allowed.

Evaluation of Potential Alternative Toll Rate Plans

We looked at three general approaches to changing the toll structure on the Tacoma Narrows Bridge. One involves discounts for frequent users (Scenario 1). Another involves different ways of buying down the toll amounts (Scenarios 2 and 3). The last involves expanding the use of tolling around the State.

Scenario 1: Frequent User Discount – The first approach involved allowing frequent users to have reduced toll rates. There are numerous ways to do this, but a typical plan might involve letting frequent users pay a $9.00 monthly fee to allow them half-price tolls, with increases in the fee and toll amounts as regular toll rates increase. Anyone making more than two trips across the TNB per week would benefit from this program, meaning that almost 55 percent of trips would receive a frequent user discount. This is projected to result in 4.7 million more vehicle trips (+1.18 percent) and a $358.3 million loss in revenue (-16.14 percent) over the 2007 to 2030 forecast period. There will also be some additional operations costs associated with administration of the TNB Discount Program. The revenue shortfall would need to be made up from other sources or from increases in the toll for those who are not frequent users.

Someone using the bridge twice per week would save 13 percent, and someone using the bridge five times per week would save 36 percent on tolls. Higher frequencies would see higher savings. Discounts for frequent users do shift the financial burden of paying for the bridge from those users. This discount plan, however, does potentially work at cross-purposes to other potential objectives of tolling on Tacoma Narrows Bridge, i.e., to manage traffic flow.

WSDOT is in the process of conducting studies of alternative toll schedules to these goals of the Tacoma Narrows Bridge "Good To Go" tolling program: 1) rapid market penetration of toll transponders; 2) reduce and manage backups at the toll plaza during the morning commute, especially during the first week of

operation and during rehabilitation of the existing span; and 3) maintain a high level of "Good to Go" user satisfaction. Those studies are expected to be complete in spring 2006, and will be used to inform the Commission's deliberations on toll setting on the Tacoma Narrows Bridge.

Scenario 2: Start Tolls at $2 – This is a buydown plan that would involve reducing the initial toll from $3 to $2 for passenger cars, with proportionally higher tolls for larger vehicles. Tolls would increase in the same years by $1 as currently envisioned in the TNB Financial Plan, topping out at $5 in 2016 (rather than $6). This plan would create a cumulative cash flow shortfall of close to $391 million, or 18 percent of total toll collections that would have to be made up from other sources, using transfers into the Tacoma Narrows Bridge fund so that debt service payments can be made.

Scenario 3: Keep Tolls at $3, without Future Increases – This buydown plan would involve keeping the toll at the $3 level for passenger cars (with higher rates for trucks), foregoing the planned toll increases. This plan would have a cumulative cash flow shortfall of about $942 million over the forecast period, or 42 percent of expected revenue. This deficit also would need to be made up from other sources.

Under current conditions, where there are no other tolls in the State, the buydowns could be seen as generating a more equitable transportation funding system. However, in the longer-term perspective of how major bridge crossings have been funded in Washington, bridge tolls remain an appropriate mechanism. As long as future bridge projects continue to be advanced through the use of tolling, the current rates are equitable. This is particularly true when comparing the planned toll rate on Tacoma Narrows Bridge with the rates used on Tacoma Narrows Bridge with the inflation-adjusted rates used to fund the 1950 TNB, and the rates at other Washington toll bridges in the past.

Expanded Use of Tolling Around the State

A fourth scenario considered potential future policy decisions that might be made by the legislature. If significant use of tolls is advanced to fund major projects in Washington, then customers of the Tacoma Narrows Bridge will no longer be a special case. This is not to say that there might not be details to be worked out related to equitable toll amounts on future toll projects, but that issue is being addressed in the remainder of the tolling study. The situation at the TNB will be considered when recommendations are developed for the rest of the State's system.

3.0 Next Steps

This interim report provides an analysis of policy questions facing Washington State as it considers expanded use of tolling. Other tasks are still being advanced, with the final report expected in July 2006. A summary of the ongoing work is described below.

■ Illustrative Examples

The consultant team is conducting technical analysis of illustrative examples of tolling and pricing applications that are intended to help inform the policy choices. The examples represent the types of tolling applications that already are being considered around the State, as well as others. About half of the examples are being studied now, with findings expected in February (see Table 3.1). The remainder will be studied in the March-May 2006 (see Table 3.2). In addition, the tolling study is building upon work that already was underway for WSDOT on the Congestion Relief Analysis Phase 2.

■ Legal and Regulatory Considerations

Once the Commission has reviewed the findings of this study with the Legislature, the consultant team will evaluate what legal and regulatory actions would need to be taken to implement the recommendations.

Table 3.1 Illustrative Examples

First Pass (By February)

Project	Illustrates
1. SR 704 Cross Base Highway Two lanes each direction, as designed; one toll point on either side of the center interchange. All-electronic toll collection.	Funding a highway project
2. Snoqualmie Pass Improvements Safety improvements and some capacity enhancement	Funding a highway improvement, maintenance, and operations project
3. SR 520 and I-90 Bridges over Lake Washington **SR 520:** • 3 lanes each direction, one of which is a 2+ HOV lane; • everyone but HOV 3+ tolled • variable tolls to manage demand **I-90:** • R8A project (adds one HOV 2+ lane each direction in outside roadway) and existing center lane operations. Everyone but HOV 3+ tolled	System of tolled bridges for traffic management and funding
4. SR 167 and I-405 HOT Lane System: Sumner to Bellevue **SR 167**: • Add one HOT lane and convert existing HOV lane to HOT lane; add HOV lane south of SR 18); results in two HOT and two general purpose lanes in each direction. • HOV 2+ are free. **SR 405:** • Add one HOT and one general purpose lane, and convert existing HOV lane to HOT lane in each direction; results in two managed and three GP lanes in each direction. Consistent with "Option D." HOV 2+ are free.	HOT lane system corridor for traffic management. Anticipates that additional non tolling capital would be required.
5. I-405 North HOT Lanes – SR 520 north to I-5 (Swamp Creek) **Project Capacity Improvements:** • Nickel plus TPA Projects from SR 520 north; • Nickel only from SR 520 South. **HOT Lane Definition:** • Two lanes each direction from 520 to 522 (one added lane plus the existing HOV lane); • One lane each direction from 522 to I-5 (convert existing HOV lane). HOV 2+ are free	HOT lane that can be implemented in the near term, consistent with current planning efforts, that includes additional capacity, not just conversion of existing HOV lane.

Table 3.2 Illustrative Examples

Second Pass (This Spring, Subject to Change and Refinement)

Project	Illustrates
6. Western I-5 Alternate Corridor • 509/I-5 Congestion Relief Project o 509 extension to I-5, 6 lanes o HOT Lane: plus 6 miles of improvements on I-5 from South 320th to South 200th (one lane each direction). • Alaskan Way viaduct replacement (as proposed, same capacity and access points as today). • No improvements to East Marginal Way. Tolling to be consistent with assumptions from 2002/2003 RTID studies.	Toll urban corridor for traffic management and funding. Anticipates that additional none tolling capital would be required.
7. I-5 Truck Only Toll Lane From SR 512 to I-90. Add one lane in each direction. Convert existing HOV lane, plus the new lane to TOT lane. Buses allowed in TOT lanes for free.	Truck only toll lane system, including elimination of HOV access.
8. Seattle Cordon Pricing To be defined	Cordon pricing concept.
9. Columbia River Crossings To be defined[a]	System of tolled bridges for funding.
10, 11. To be determined	
Congestion Relief Analysis Phase 2 Scenarios	
HOV to HOT lane conversion Convert all existing and planned HOV lanes to HOT lanes. (HOV to be redefined as 3+). Excludes SR 16 and SR 520	
HOT Expansion. Add one lane in each direction on all existing and planned HOV lanes, to create a two-lane managed facility on the core HOV system. SR 16 remains one lane in each direction HOT. This includes direct connectors	
HOT Hybrid Hybrid of best components of above two.	
Toll all roads in PSRC region To be defined.	

[a] There is an extensive amount of ongoing tolling work occurring right now on the Columbia River Crossings. It is possible that we may be able to incorporate that work without additional technical analysis for this project.

Public Opinion Research

The consultant team has begun a public opinion research effort aimed at exploring:

1. What is acceptable to Washington citizens regarding financing transportation projects and new construction through a tolling mechanism;

2. Whether using tolls to help manage congestion is acceptable to Washington citizens; and

3. The acceptability of various policy alternatives, proposals, and approaches to planning, choosing, and governing a statewide system.

The team will utilize surveys and focus groups in three areas of the State where tolling may be indicated but not yet in place. The expected outcome is to provide a comprehensive profile of citizen attitudes regarding the potential use of tolling in the State.

The results of this research are expected by early March 2006.

Public Outreach and Communications

Public outreach and communications will be critical to success should Washington choose to expand the use of tolling in the State. The consultant team has developed a proposed approach to outreach and communications, and will work with the Commission regarding when this would be carried out. The outreach and communications program would be developed to meet the following objectives:

1. Identify concerned groups and individuals, including a broad spectrum of community leaders, interest groups, stakeholders, underrepresented groups, and members of the public whose views and voices should be heard in this study.

2. Reach out to the public and encourage their participation and maximize the distribution of information to encourage the broadest possible input. Provide opportunities for a diversity of viewpoints and opinions about the options that will be considered.

3. Clearly communicate study information. Provide citizens and stakeholders with the facts about the study and the study team's analytical methods, evaluation criteria and technical findings in a way that can be clearly understood.

4. Coordinate with the public attitude research component and compare input received in this outreach with that obtained through surveys and focus groups.